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AUTHOR Woodward, John
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ABSTRACT

As part of a 3-year study to identify emerging issues and trends in technology for special education, this paper addresses the complex issues of school reform and its relationship to educational technology. School restructuring is discussed in terms of instructional improvement, relationship to the Regular Education Initiative, and the increased professionalism of teaching. Concerns about technology being viewed as the basis for change are raised, such as the failure to integrate computer use into the school's culture within both regular and special education settings. The relationship of special education to the reform of general education is considered in the context of Department of Education priorities and six projects funded under the School Buildings Models Priority research program which encouraged instructional, organizational, and administrative innovations related to educating children with disabilities in the general classroom environment. Preliminary findings have indicated that teachers have difficulty accommodating change because of its fundamental conflict with enduring practices. The difficulty of implementing research results into change at the classroom level is stressed. (Contains 22 references.) (DB)

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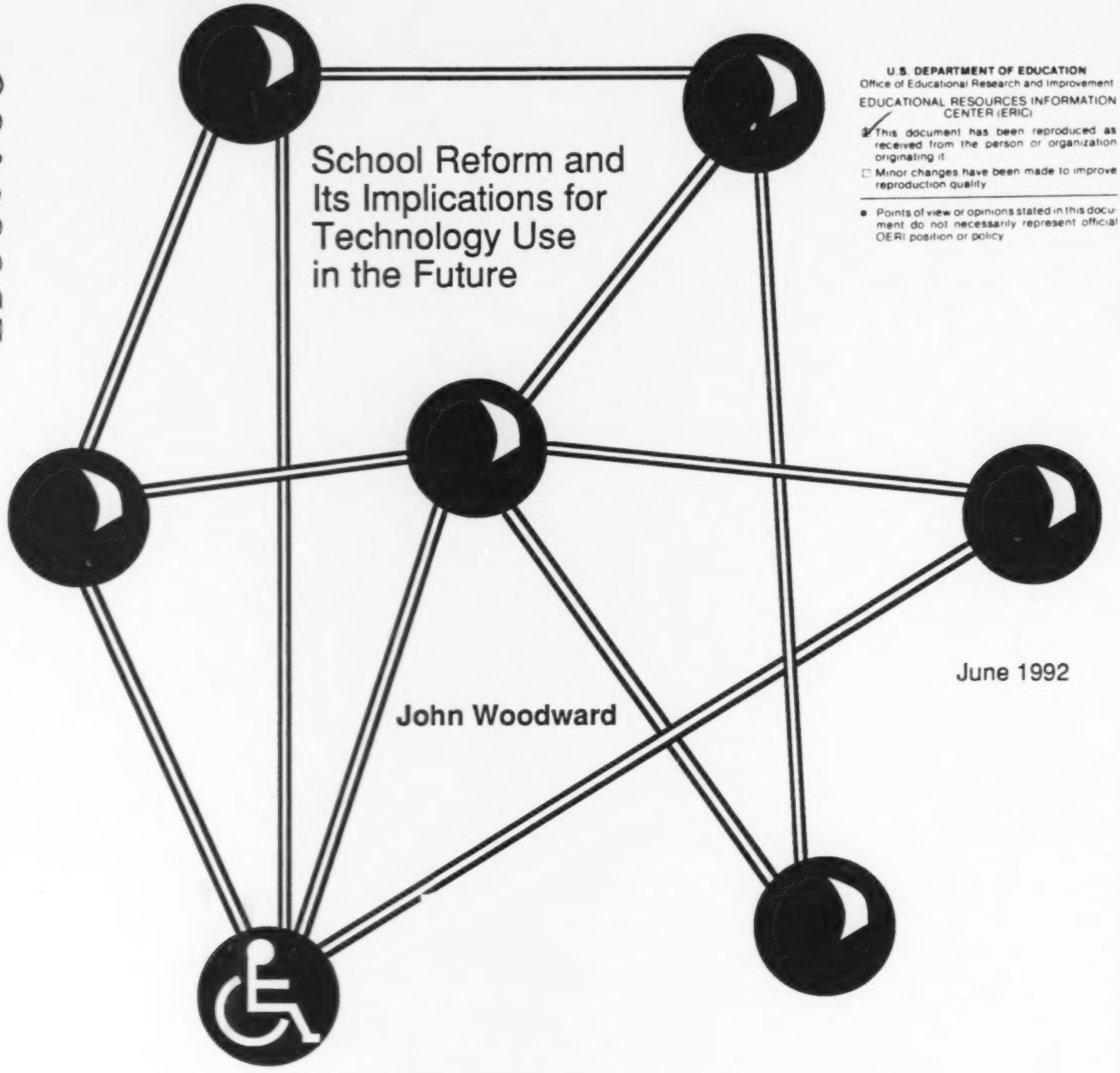
Identifying Emerging Issues and Trends in Technology for Special Education

School Reform and Its Implications for Technology Use in the Future



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June 1992

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PREFACE

COSMOS Corporation is conducting a study of the issues and trends affecting the role technology will have in the 21st century for individuals with disabilities. This three-year study is funded by the U.S. Department of Education, Office of Special Education Programs (OSEP), under Contract No. HS90008001.

COSMOS Corporation was founded in 1980, and is located in Washington, D.C. Since its inception, the firm has conducted a wide range of applied social science projects for public and private organizations and foundations. COSMOS's specialties include: conduct of case studies; identification and validation of exemplary practices; evaluation of education, job training, and human services programs; provision of technical assistance to state and community agencies; and strategic planning for public agencies and public firms.

Project participants include expert panels, project fellows, an advisory board, a consortia of practitioners, and project staff. These experts in the fields of technology and special education have come together to examine the issues and trends in these two fields, and how they impact the use of technology for special education in the 21st century. Three expert panels have started examining these issues: one with a focus on technology outside the field of education, one on special education instruction, and one on evolving service delivery systems in special education. Over the three year period their research will be synthesized and become the basis for predictions about the future.

This document is one of the papers commissioned in the first year. The purpose of the paper is to present information on one or more issues as part of the expert panel discussions. It is being shared with people inside and outside of the project to stimulate discussion on the impact of technology in the early 21st century. Readers are welcome to comment on these findings and contact COSMOS Corporation for further information.

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I

As much as today's public officials seem relentless in their efforts to reform education, their efforts are hardly anything new. Their eagerness to improve schools has been constant throughout this century, especially since World War II (Cuban, 1990). Today's critiques of education--and, consequently, the many calls for reform--range from the ideological to the eminently pragmatic. These criticisms are compounded by a rapidly changing economy that demands a new type of labor force, one which possesses much higher analytic skills than past and current workers (Reich, 1991).

Recently Al Shanker, President of the American Federation of Teachers, has acknowledged the need to radically overhaul the way schools educate students. According to Shanker, even the most advantaged students in this country aren't learning what they should. Furthermore, "minor changes will not bring about the improvements we need in schools; ...changes have to be major: the kinds of changes that take place in a factory when they move away from the assembly line model (Shanker in Brandt, 1990, p. 11)."

The intent of this paper is not to belabor what many consider to be the impoverished state of today's schools or to examine student achievement through extended comparisons to other industrial nations. These commentaries are well-known to most people interested in American education. And while many of the criticisms of American education--that our system is inefficient and that many of our teachers are too low in quality--naturally lead to one more resounding endorsement of technology as the answer, this paper will instead provide a brief introduction to the very complex issues of school reform. School reform, rather than the virtues of a particular technology, is the most appropriate framework for conceptualizing large scale change.

School Restructuring

While organized efforts to reform the way schools serve students is hardly a new the current movement, commonly known as "restructuring," has two distinctive features worth examining.

Restructuring looks at the issues of school reform in a deeper, more systematic way than many past reform efforts.

One of the original goals of restructuring was to improve the quality of instruction for students and in doing so, accommodate a wider variety of academic and social needs. Changes in teaching strategies, curricula, and so forth, were intended to provide support for students who were bored with traditional approaches and, more importantly, for those who tend to "fall through the cracks." Often these students were tracked according to ability, a practice that some argue has been non-productive and even detrimental to student success and self-concept (Oakes, 1985).

Restructuring in this sense also extends to the Regular Education Initiative (REI), which addresses the efficacy of special education services for mildly handicapped students (see Journal of Learning Disabilities, January, 1988; Remedial and Special Education, May/June, 1990). As Will (1986) noted, pullout programs that are so common for these students have failed "to meet the educational needs of these students and have created, however unwittingly, barriers to their successful education" (p.412). Yet to date, few programs (e.g., Success for All, Slavin, 1990) exist with sufficient data demonstrating the feasibility of such reintegration, and by most accounts, these efforts are expensive and labor intensive. Nonetheless, the REI presents an important way in which special education has implicitly dovetailed with the restructuring movement.

A second goal of school restructuring has been the increased professionalization of teaching. Restructuring in this light connotes a reform of teaching in terms of mentorship, career ladders, and governance. Teachers and their individual schools are to take a more active and primary role in decision making. Ostensibly, teachers would have increased opportunities for communication and decision making which would directly affect class size, curriculum, and placement in a school. Teachers would radically alter their traditional, day-to-day patterns of work, which have often been portrayed as a multitude of decisions which are made "behind closed doors," and in isolation from

other teachers (Little, 1984; Rosenholz, 1989). Restructuring, from this perspective, would entail far greater collegiality and collaboration than is currently the norm--methods of interaction that could have positive benefits for mildly handicapped students.

While all of this creates new opportunities for general and special educators, progress in this area is likely to be slow if current efforts in school change are any index. Two examples of school reform follow. The first is drawn from reflections on the effort over the last decade to change instructional practices in general education through technology. The extent to which this has been successful historically is called into question.

The second example comes from a recent, federally directed effort at school reform. All six projects were sponsored by the U.S. Department of Special Education programs, and they attempted to use empirically based models for increasing the integration of mildly handicapped students in general education settings. The findings, though preliminary, flesh out the difficulties in a comprehensive approach to school restructuring.

Technology as a Basis for Change

Earlier in the last decade, visionaries (Bork, 1981; Papert, 1980) claimed that computers would revolutionize learning. Cohen (1987) has captured the cultural appeal of technology, noting that,

> Americans are fond of picturing technology as a liberating force: cleaning up the workplace, easing workers' burdens, making the good life broadly available, increasing disposable income and the like. Nearly all of the new technologies pressed on schools, from books to microcomputers, also have been advertised as agents of liberation. They would change education by making students less dependent on teachers, and by reducing whole class, lock-step, batch-processed teaching and learning. Whether they are dreaming about schools or steel mills, Americans are attracted to the liberating possibilities of technical innovations (p. 154).

Some recent evaluations of technology use in education, however, have concluded that computers are failing as educational aids (Buckeley, 1988; Snider, 1986). Critics of educational technology (Cuban, 1986) point out that the early sanguine predictions are similar to those that accompanied previous technological innovations such as instructional television. Once initial enthusiasm palled, the educational community has utilized these technologies at an extremely modest level, and their impact on improving instruction has been minimal.

These critics (Cuban, 1986; Cohen, 1987; Wolcott, 1981) argue that computers are but another in a set of educational innovations which have largely ignored the culture of schools. Cuban (1986) stresses that computers have been forced on schools in a "top down" fashion. As computers have commonly been deployed in classrooms and labs, they don't mesh well with the various demands and routines that characterize a teacher's day. Technology is viewed as one more burden in an array of competing social messages about education (e.g., socialize children; teach them practical, marketable skills; demand obedience; cultivate cooperation).

> Coping with these conflicting messages within the hierarchical structures in which teachers must work drives them to construct a practical pedagogy, permitting them to complete a hectic five-hour instructional day. Reduced to classroom scale, teacher-invented solutions to these contradictions often have concentrated on transferring knowledge, skills, and values to students through the teacher lecturing and questioning while the student listens and answers, and through reading textbooks and performing chalkboard and other in-class work...

For years, educators searched for means of communicating knowledge in simple, inexpensive, and timely ways... This dream has persisted from the invention of the lecture centuries ago to the early decades of this century when reformers sought efficiency through film, radio, and television. The dream persists into the 1980s with promoters boosting

desk-top computers for each student. In the insistent quest for increased productivity and efficiency, the lecture, film, radio, television, and microcomputer are first cousins (pp. 2-3).

The lack of sensitivity to the realities and routines of classroom learning has resulted in a revolution that has been, at least for the moment, temporarily derailed. Radical innovations such as microcomputers, Cuban argues, ignore the constraints and contextual pressures that generate a much more modest and durable "tell and test" style of instruction. These views seem to apply equally well to special education as well as regular education settings.

As educators look to the future, new technologies are likely to confront the same fate if the nature of schools and teaching practices are undervalued or ignored. A second example of school restructuring and the pace of change can be seen in recent federally funded efforts to reintegrate mildly handicapped students in general education classrooms.

Special Education and the Reform of General Education

In 1985, the Division of Innovation and Development (DID) in the U.S. Department of Education's Office of Special Education programs set in motion a five year research program designed to, "systematically investigate instructional, organizational, and administrative issues related to educating children with disabilities in the general classroom environment" (Kaufman, Kameenui, Birman, & Danielson, 1990, p. 112). The School Buildings Models Priority, one of eight DID priorities funded under this research program, required researchers to design a model for educating students with disabilities in general education settings and in doing so, implement strategies that would assist teachers with instructional and behavioral problems with this population. These projects would also examine current identification, assessment, IEP procedures; the coordination among service providers; and ways to encourage parent and family participation. Federal officials acknowledged that this was the most ambitious priority of the

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research program (Kaufman et al., 1990), a characterization that the six sets of researchers have come to fully appreciate.

Interventions employed by the six projects were wide ranging. Some projects stressed empirically based interventions such as curriculum based measurement, structured reading programs involving cooperative learning, such as Cooperative Integrated Reading and Composition (CIRC), study skills programs, and peer tutoring. Each model attempts to improve the achievement and school adjustment of mildly handicapped students with a set of best practices delivered primarily in the general education setting. Though cooperative planning and problem solving are also features of the models, emphasis is placed on this process primarily at the beginning of the intervention.

Three other projects paid greater attention to the methods of introducing, maintaining, and refining the innovations. These models relied heavily on staff input regarding the kinds of interventions that might help low achieving students throughout the entire two to three year implementation process. One model, for example, implemented a school-wide planning process that encourages problem solving and peer leadership, and fosters an egalitarian perspective during the first year of the project. The importance of building support in advance of actual innovations is supported by a large body of school change literature from the last decade.

Another model used "coaching" or classroom technical assistance to general classroom teachers in instructional strategies as a basis for reforming practice. This project also cultivated visible administrative support for the project in the district and the school. A third model encouraged parental and family involvement. This is done through newsletters addressing topics of interest to parents and teachers (e.g., motivation, emotional development, responsibility). The model also attempts to improve the conditions of teachers by reducing student-teacher ratios through the use of "roving teachers." Classroom assistants and roving teachers move throughout the school

during the day meeting the specific needs of teachers in areas such as increased monitoring and team teaching.

Tentative Findings. While the overall results of these projects are still being analyzed, project directors have shared many preliminary findings over the last three years. As each model moved into its second year, the project directors were quick to acknowledge that implementation was much more complex than they had anticipated. To be sure, many reported some successes, although they occurred only through the added support of the federally funded project. More common were reflections on their role as change agents or educational reformers, ones which demanded extensive contact and negotiation with a range of school personnel. The seemingly glacial rate of change was frustrating, and the interchange with general educators was, at times, less than satisfying.

In some respects, the findings were similar to observations made by those critical of technology use in schools. Teachers had a hard time accommodating change because of its fundamental conflict with enduring practices. The resistance toward change was best captured by one of the projects. Change, when it occurred, was described as non-linear in nature. Several factors influenced this "up and down" process. The first was that learning typically follows a pattern with plateaus, peaks and valleys--allowing for time to consolidate new patterns of behavior. The second was that in some cases the process entailed a conflict with teachers' implicit model or conception of teaching.

Rather than offering a cynical and often degrading view of teachers, this second factor alludes to the central problem of changing old teaching habits--a core concern of the restructuring movement. Mary Kennedy (1991) has been very articulate on this issue. She has noted that few developers of innovative instructional approaches in the 1960s and 1970s "took into account the deeply-held and tacit convictions that teachers brought with them....they may have tried to teach teachers how to behave without articulating fully their own assumptions about why this would be a superior way to behave." The

research of Floden (in press) shows that most teachers are individuals who liked school, who did well in school, and do not easily comprehend the world view of seemingly unmotivated, low-performing students. Few recognize that some of their students may have a very different orientation towards school than they did when they were children. Breaking teachers from this mold is an intricate, time-consuming process.

Concluding Remarks

If nothing else, the history of educational change and school reform teaches us that it is extremely rare that research easily finds its way into the classroom (Fullan, 1982; Good, 1986). The history of educational innovation is fraught with incidents of well-intentioned, conceptually sound, innovative programs which were never seriously implemented (Berman & McLaughlin, 1976; Fullan, 1982). As Cuban (1990) points out, teachers are only loosely coupled to the waves of reform that pass through schools even if their formal authority in such matters seems limited. Teachers, in effect, are free to introduce, modify, or ignore innovations depending upon how they see the value of their use for their students.

Reforming schools is a challenging process and time-consuming process, with only a glacial effect on teaching and learning in the classroom. Elmore and McLaughlin (1988) pessimistically call these cycles of reform in American education "steady work." While few doubt the potential of the silicon revolution--especially technologists eager for change that is commensurate with the pace of technology itself--the lessons from school reform in other arenas (e.g., NSF curricula in science and mathematics, early childhood interventions, reintegration of mildly handicapped students) indicate that change is plodding and complex.

As technology reformers look forward to the next two decades, two broad observations are in order. First, as new teachers enter the profession with a greater familiarity with computers (and other forms of instructional technology), some "transfer of technology" will take

place naturally. However, it would be overly optimistic to assume that this factor alone with lead to widespread and vibrant uses of technology. Again, the history of educational reform in this century, especially in regard to teachers and machines (Cuban, 1986), points to the durability of traditional "tell and test" practices.

Second, as computers increasingly permeate our lives, access to technology--particularly at home--increasingly will become a social issue. In other words, a family's economic well-being and not the curricula at its local school may be one of the most important factors in terms of who benefits from technology. In this respect, Cohen (1987) argues that the technology revolution will occur on the periphery of schools. This latter issue will be explored further in the paper of economic trends and future computer use for the handicapped.

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PAPERS AVAILABLE FROM COSMOS

The papers commissioned by the project are available upon request include:

"Technology and Interactive Multimedia" by Ray Ashton;

"VLSI Technology: Impact and Promise" by Magdy Bayoumi;

"Conceptual Framework: Special Education Technology" by Richard Howell;

"Demographic Characteristics of the United States Population: Current Data and Future Trends" by Beth Mineo;

"School Reform and Its Implications for Technology Use in the Future" by John Woodward;

"Textbooks, Technology, and the Public School Curricula" by John Woodward;

"Workforce 2000 and the Mildly Handicapped" by John Woodward;

"Virtual Reality and Its Potential Use in Special Education" by John Woodward; and

"Annotated Bibliography: Training, Education Policy, Systems Change, and Instruction" by Lewis Polsgrove.

Copies of these reports are available upon request.